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● FIG. 1a

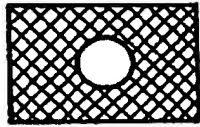


FIG. 1b

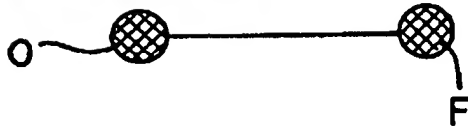


FIG. 1c

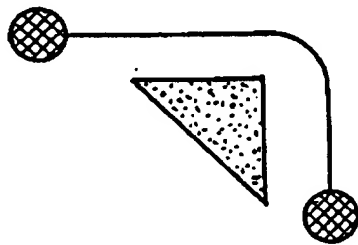


FIG. 1d



FIG. 1e

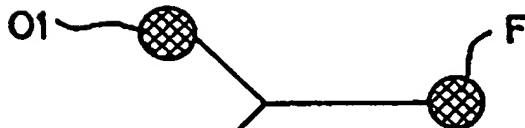


FIG. 1f

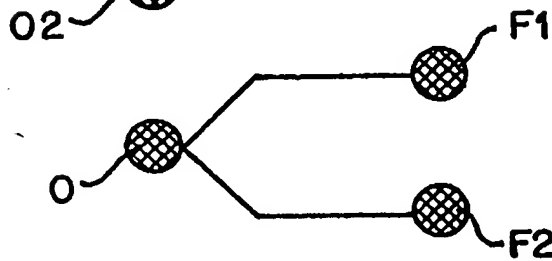


FIG. 1g

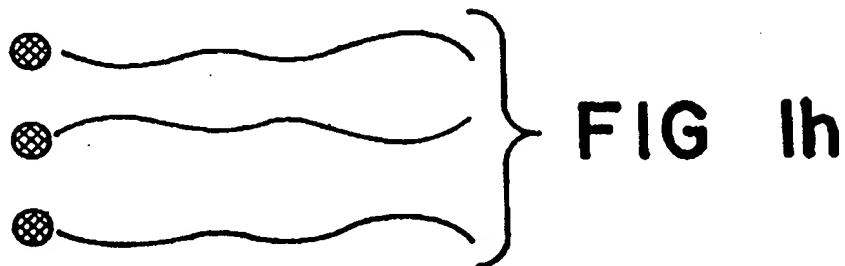


FIG 1h

FIG. 2A

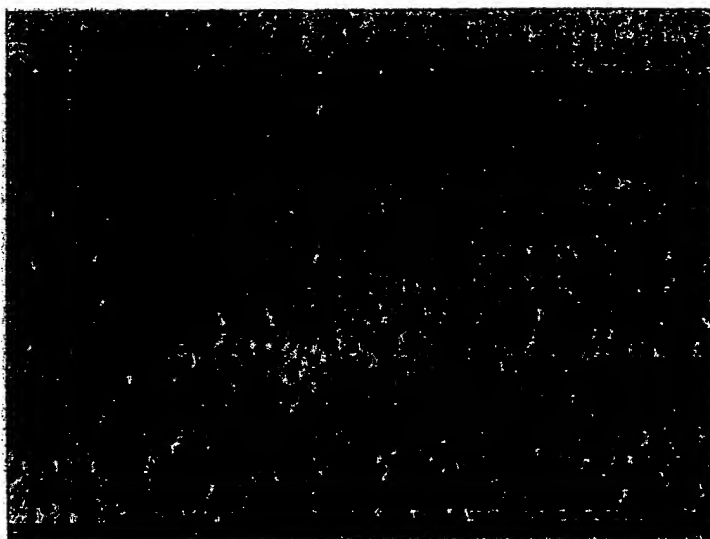
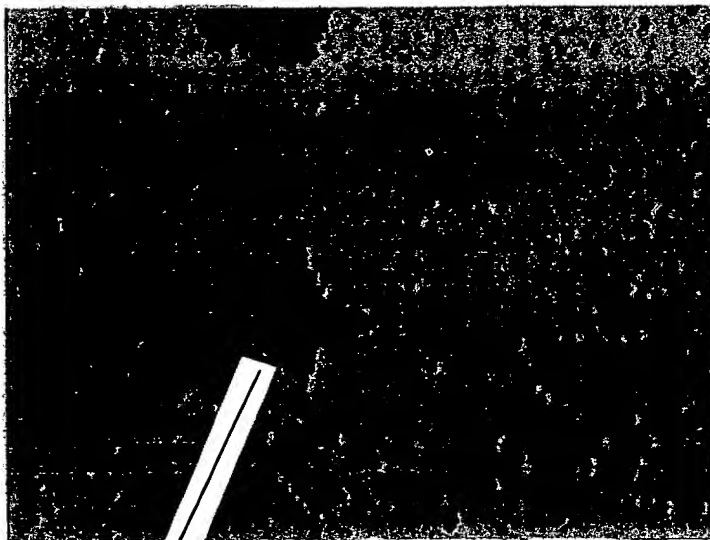


FIG. 2B



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FIG. 2C

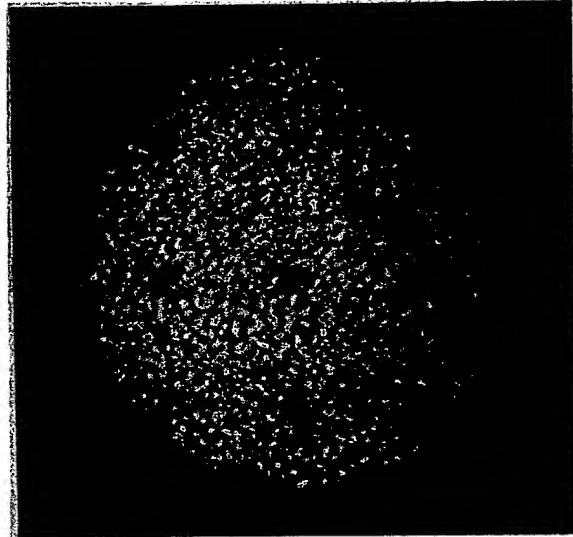


FIG. 2D

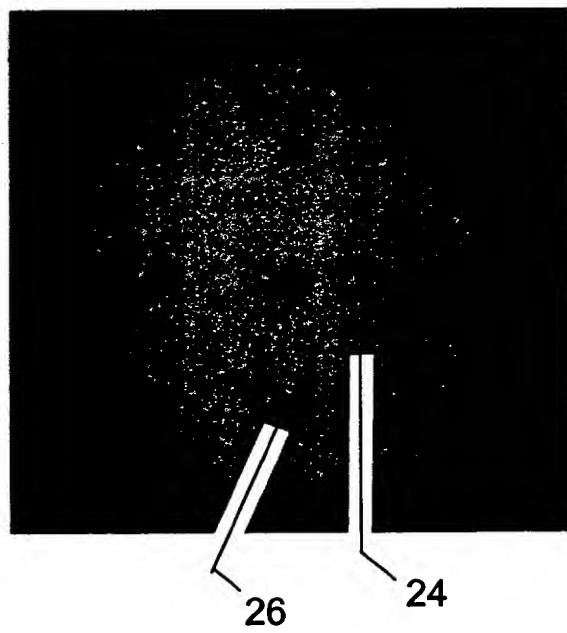


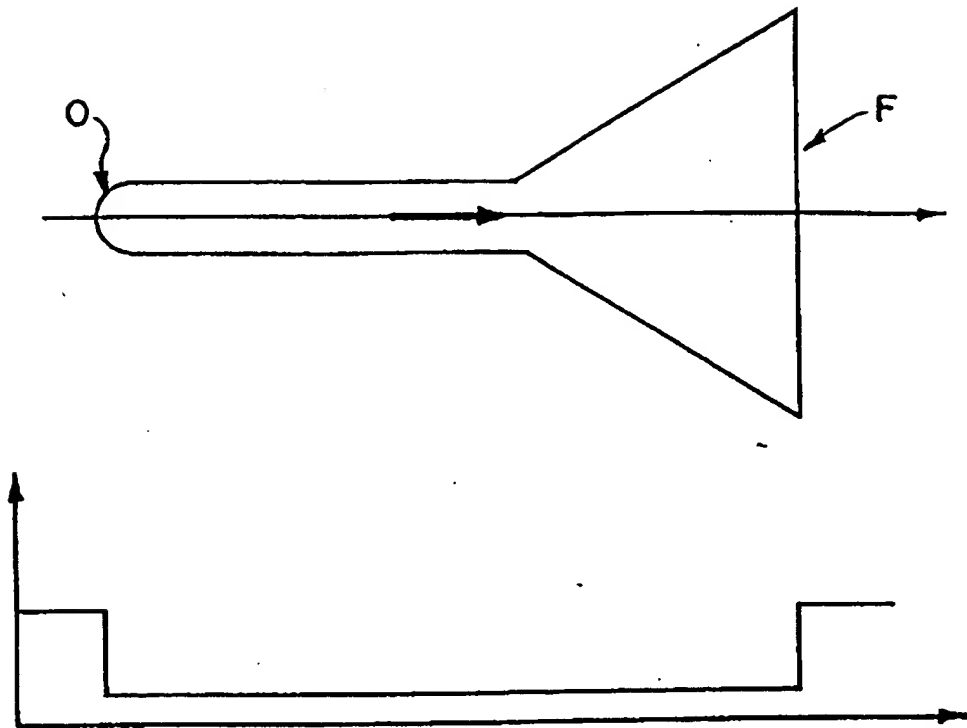
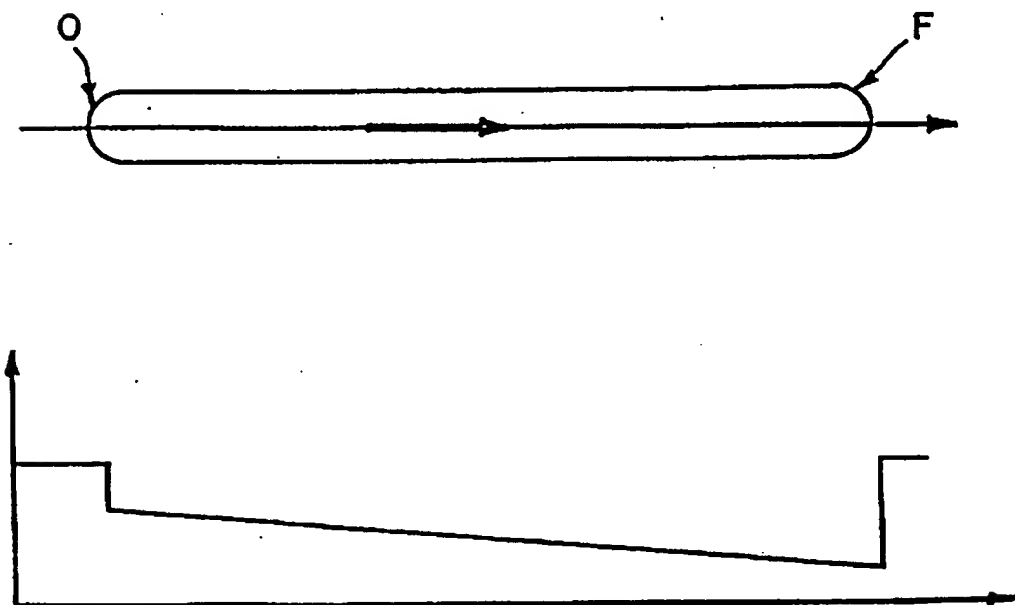
FIG. 3a**FIG. 3b**

FIG. 3C



FIG. 3D



FIG. 4A

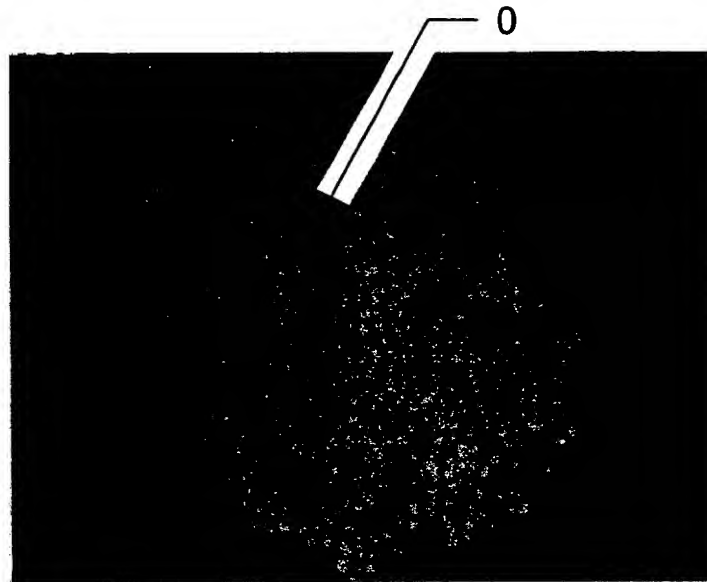


FIG. 4B

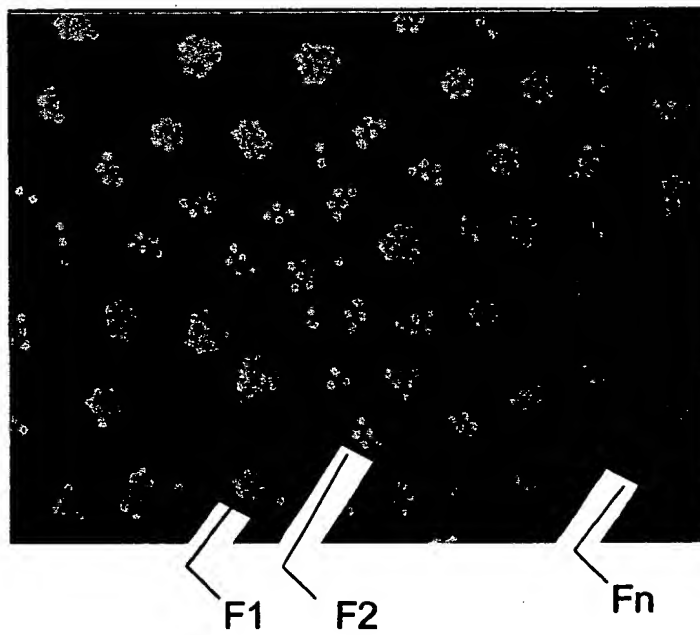


FIG. 5

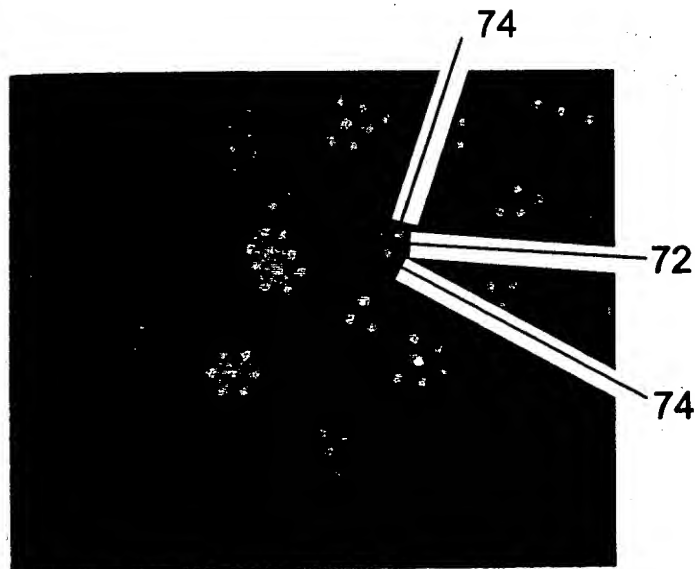
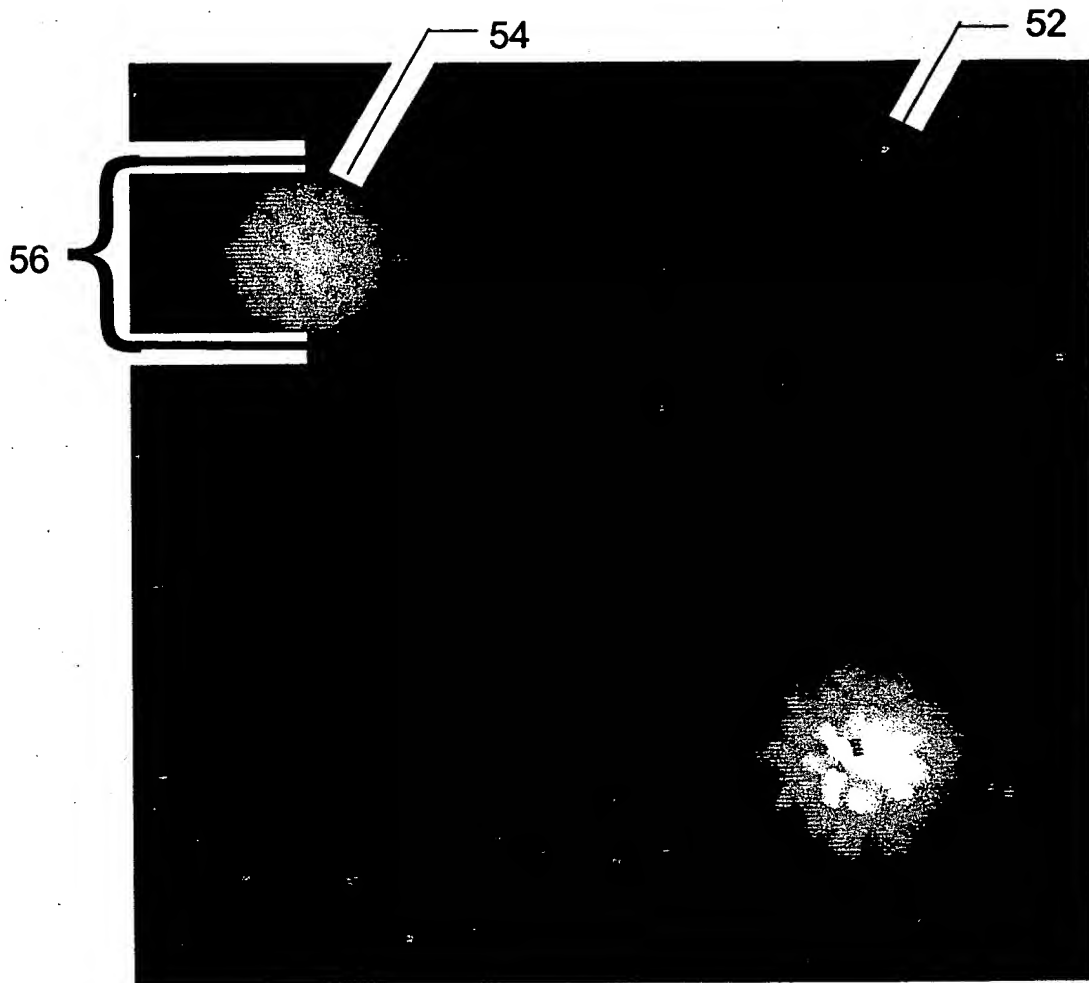


FIG. 7

FIG. 6a

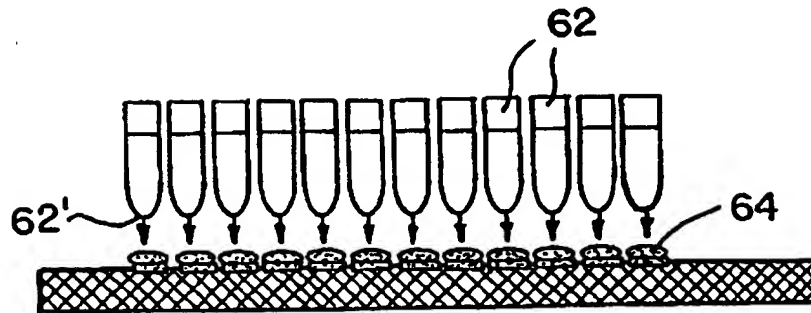


FIG. 6b

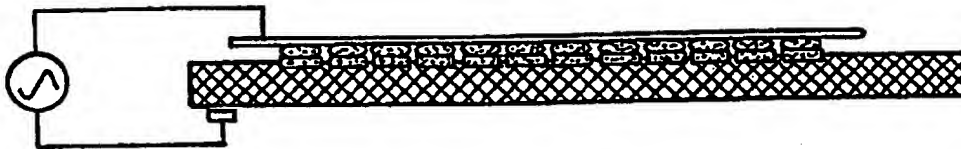


FIG. 6c

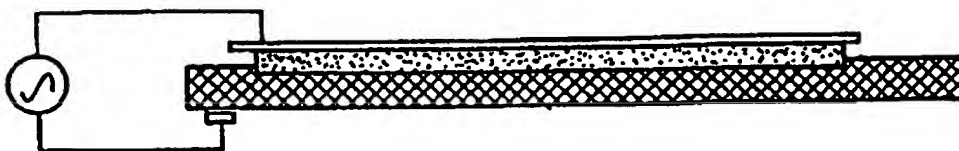


FIG. 8

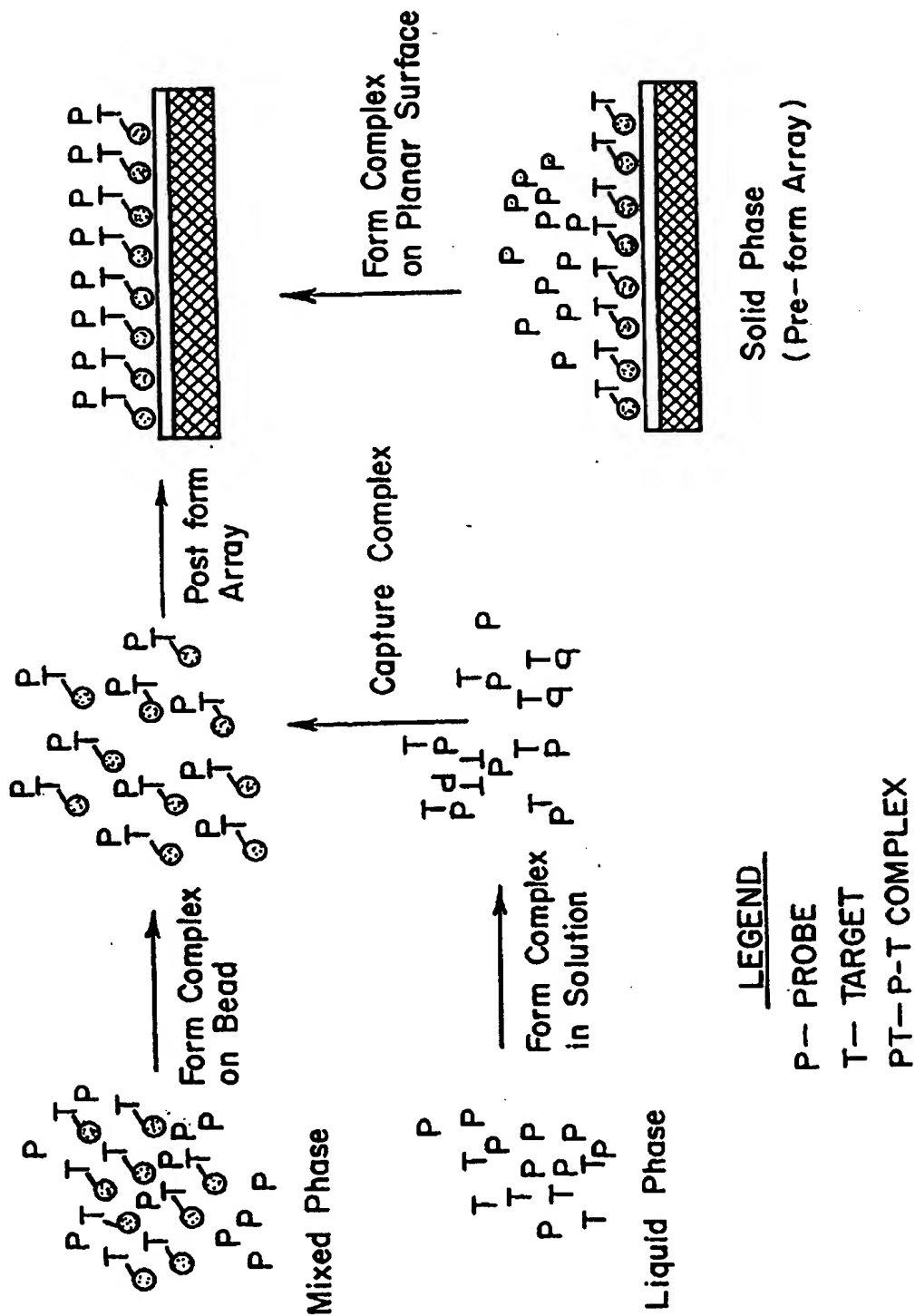


FIG. 9a

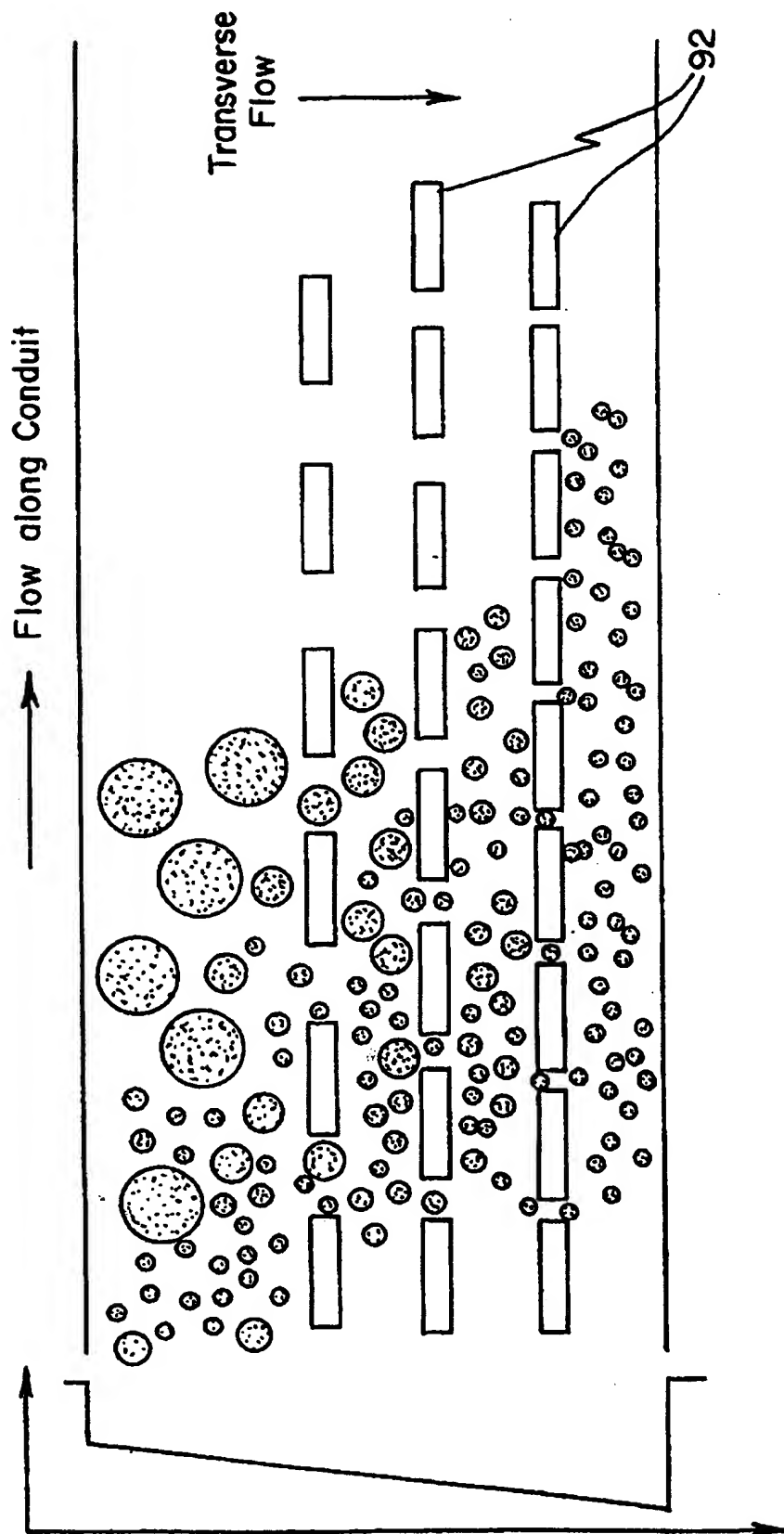


FIG. 9b

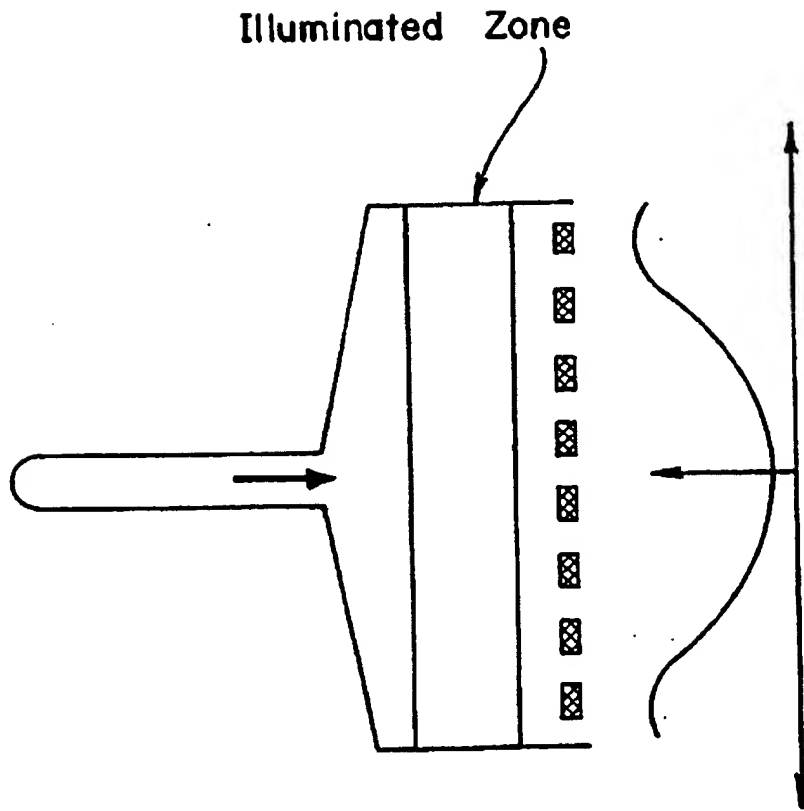


FIG. 9c



FIG. 10

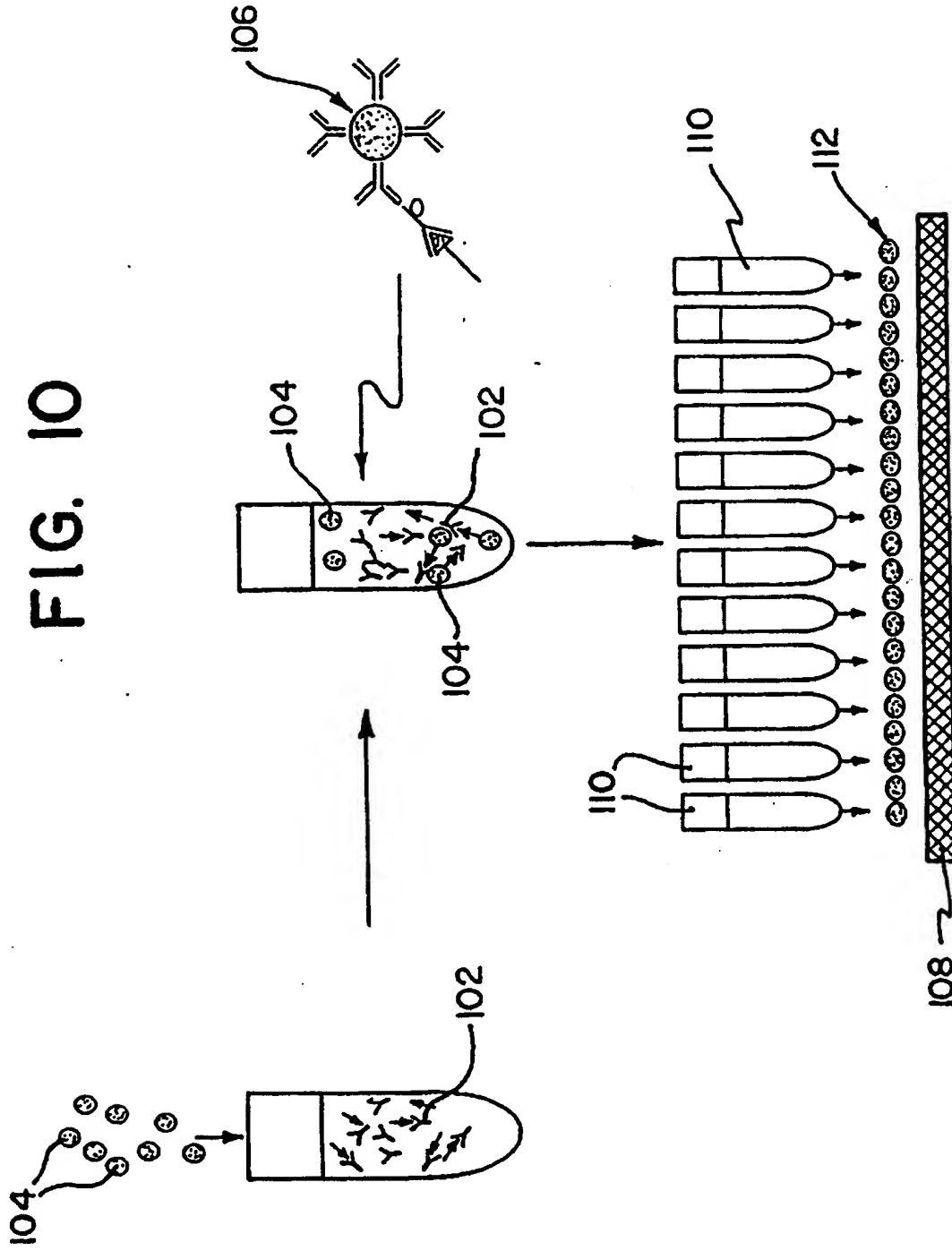


FIG. 11a

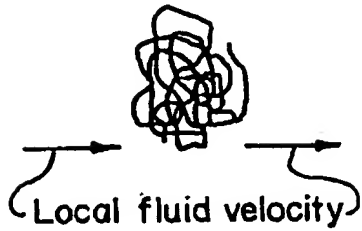


FIG. 11b

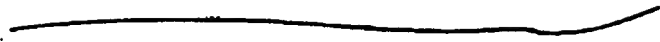


FIG. 11c

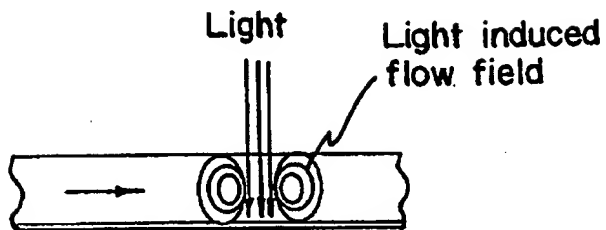


FIG. 11d

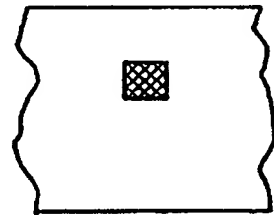
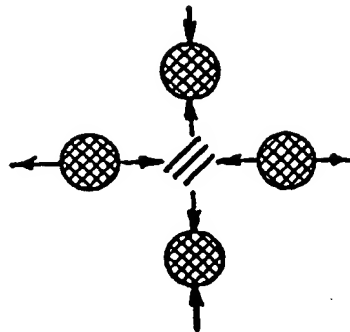


FIG. 11e



ILLUMINATION PATTERN GENERATOR

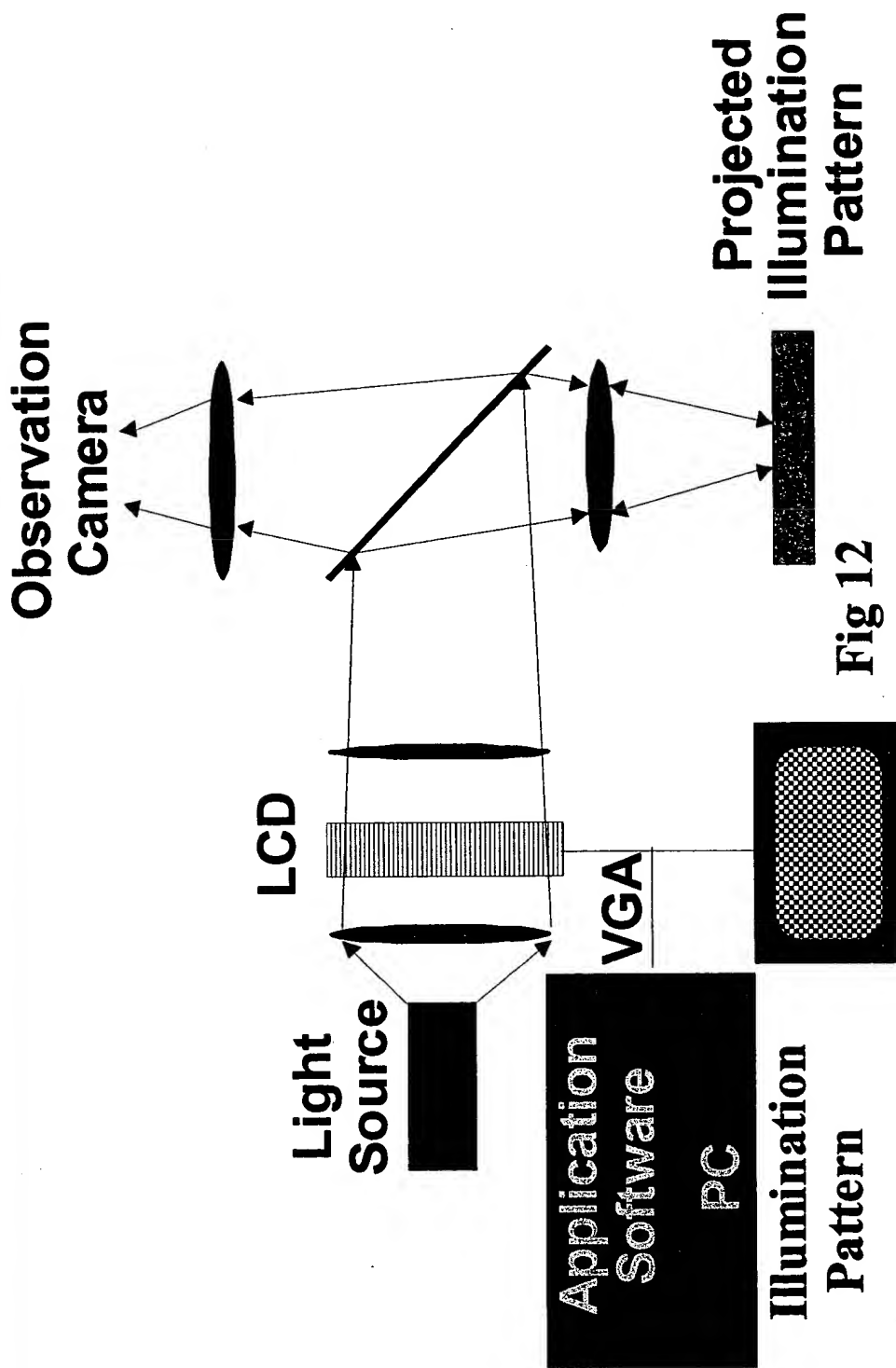


Fig 12

LCD-PARSE OPTICAL DESIGN

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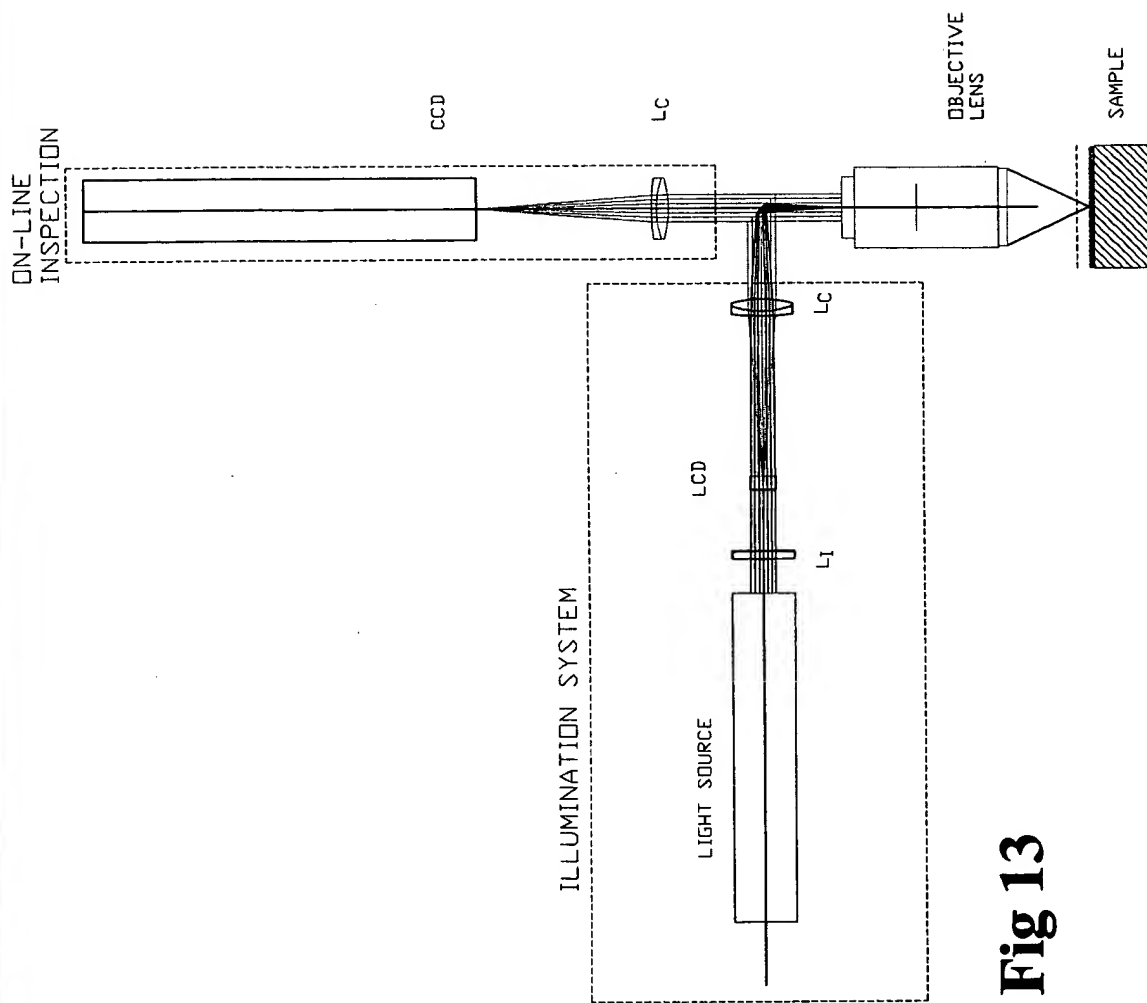


Fig 13

ARRAY SHAPE ADJUSTMENTS

CIRCLE

HORIZONTAL. LINE

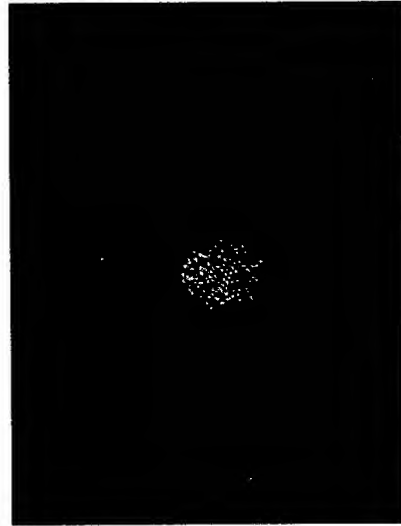


Figure 14a



Figure 14c



Figure 14b

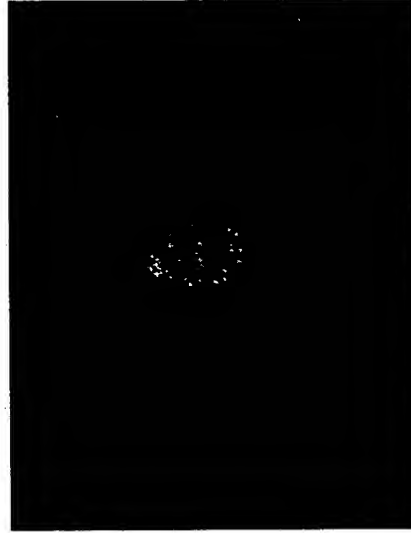


Figure 14d

VERTICAL LINE

SQUARE

COLLECTION AND ARRAY ASSEMBLY

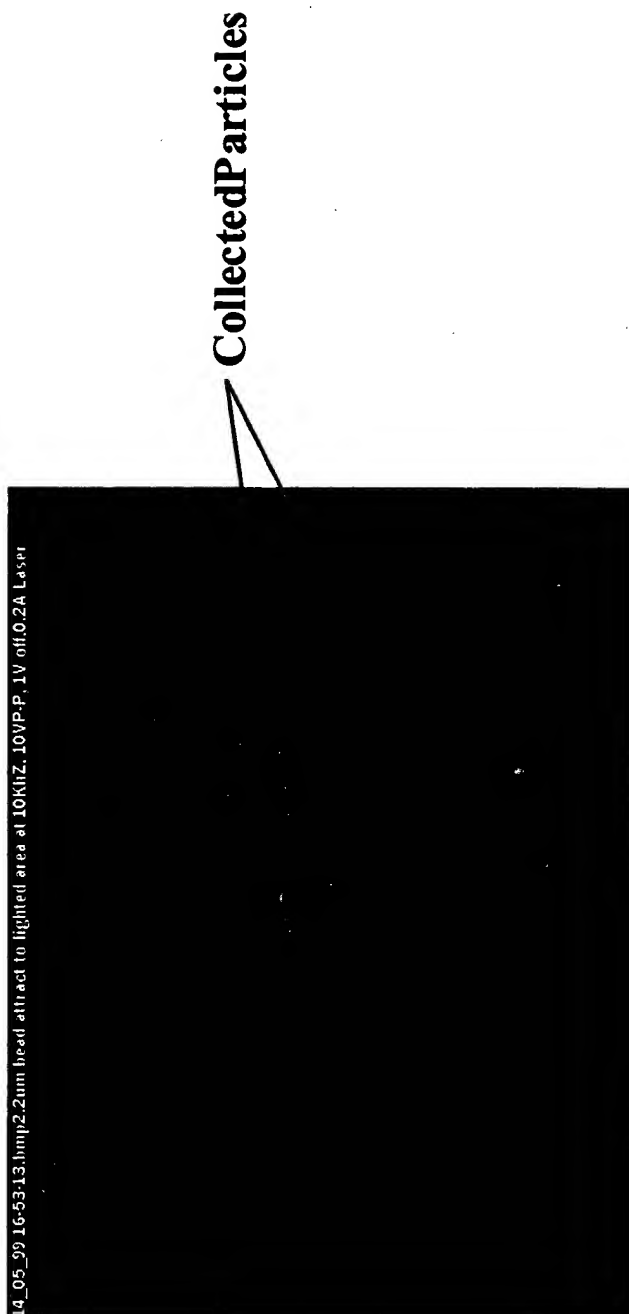


Figure 15a

EXPULSION AND CONFINEMENT

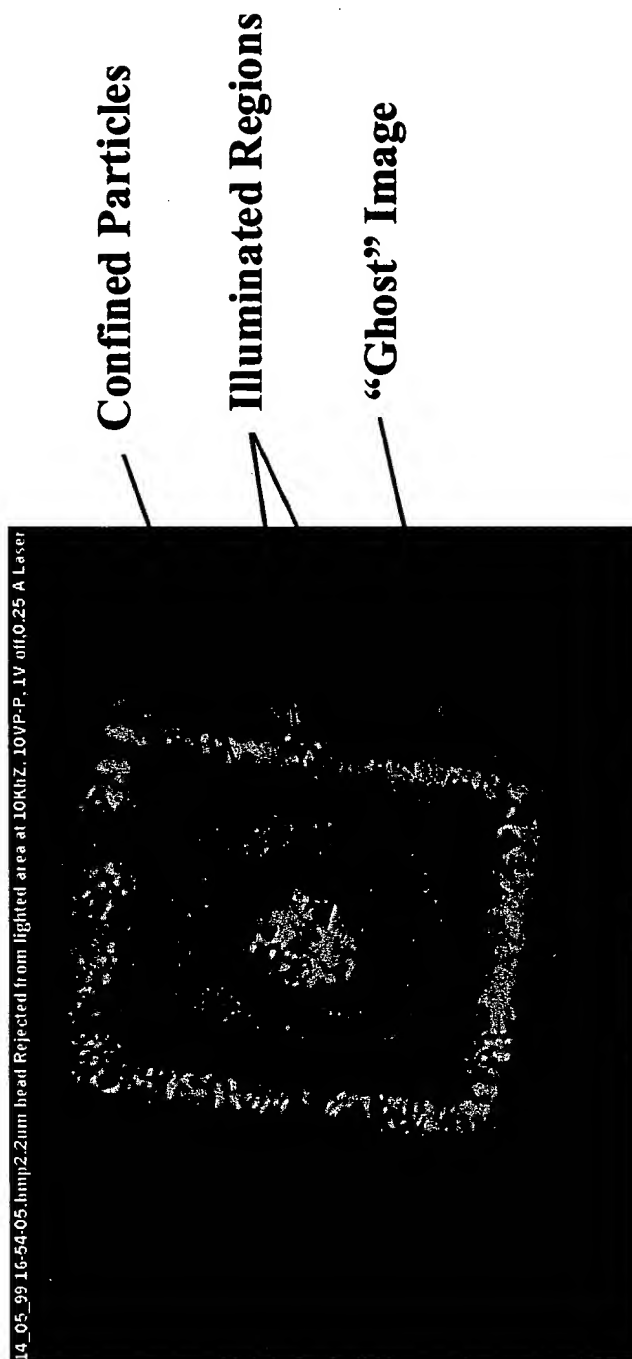
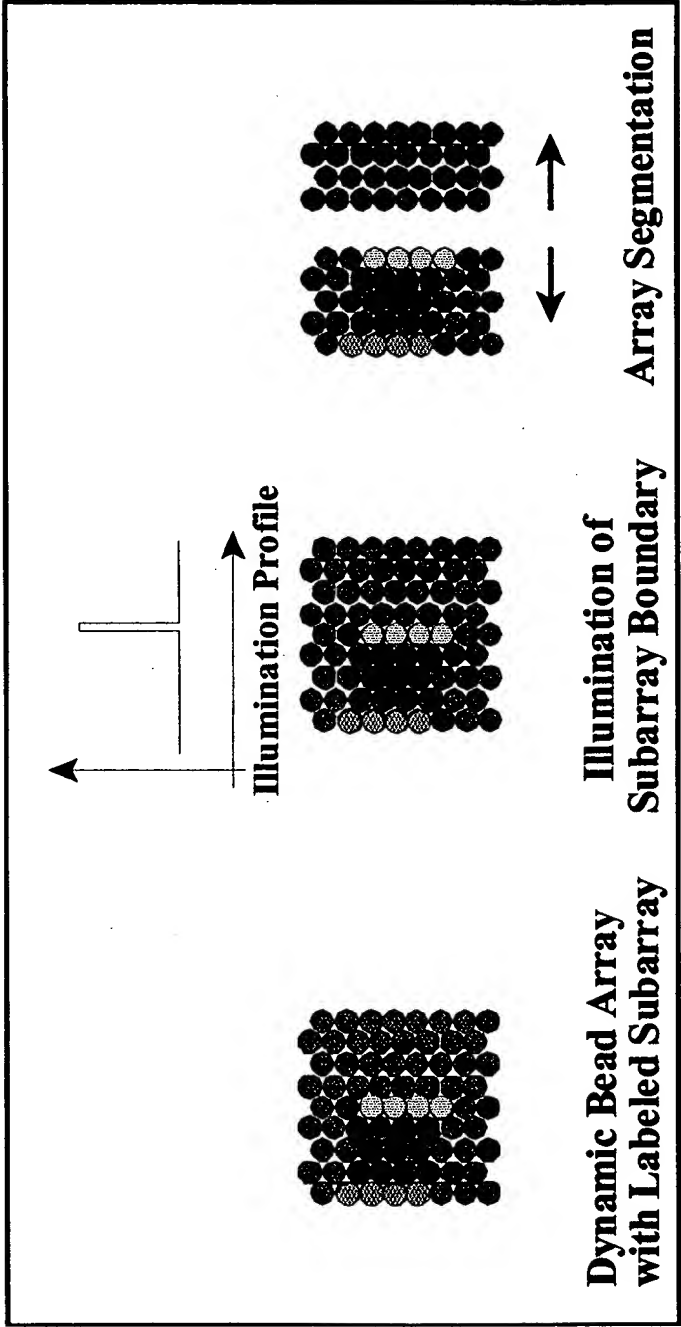


Figure 15b

DRAG AND DROP



Figure 16



Programmable Array Reconfiguration and Segmentation

Figure 17

LCD PARSE



Figure 18a

Figure 18b

LCD PARSE

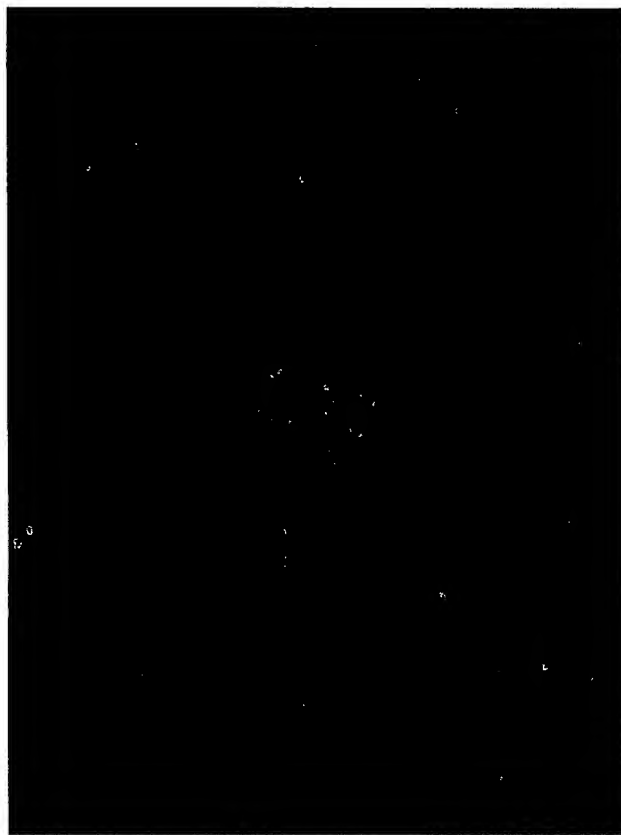
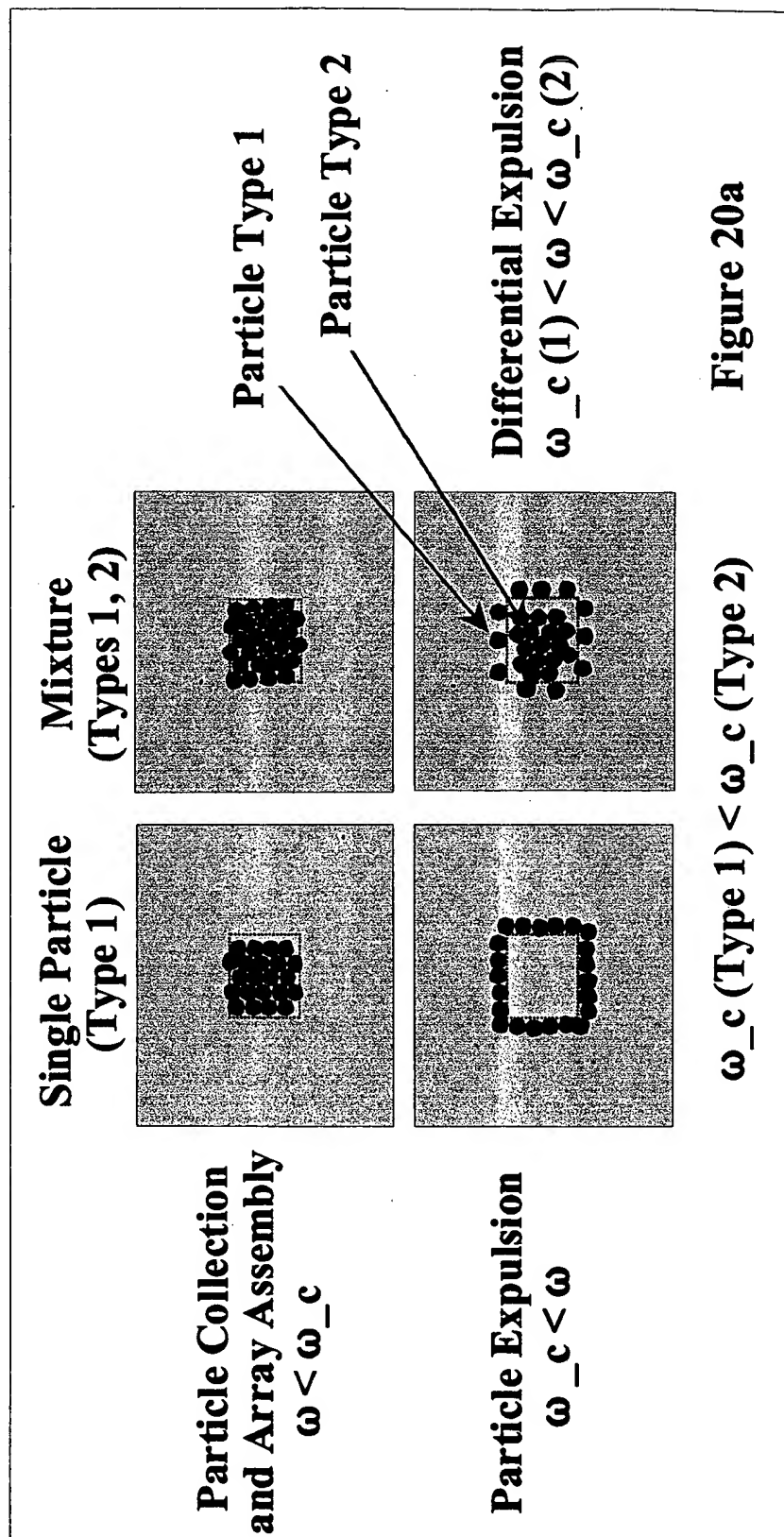


Figure 19

FRACTIONATION

Differential Frequency Dependence of Particle Expulsion
 (NOTE: ω_c denotes a characteristic frequency)



FRACTIONATION

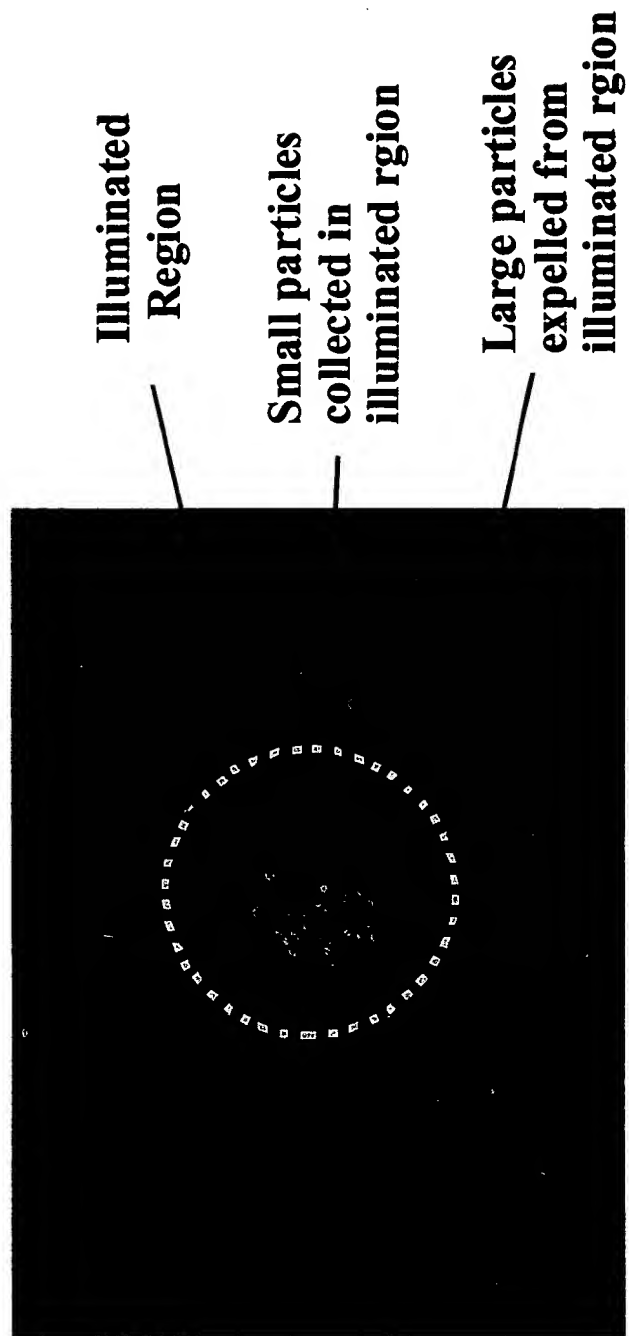


Figure 20b

[illegible]

Figure 21b

Encoding Methodologies

Single Step Carrier Coding

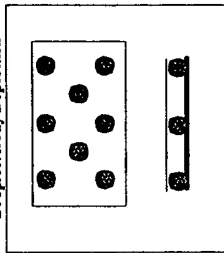
- Optical
- bulk staining (1-100)
- "stacking"
- Dielectric (1-6)

Multiple Step Reaction Coding

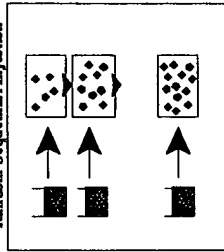
- Optical
- Surface labeling (2^n)

A. CHEMICAL ENCODING

Multi-Step: Droplet Array Deposition



Multi-Step: Random Sequential Injection



B. SPATIAL ENCODING

1 - Pre-Processing

2 - Post-Processing

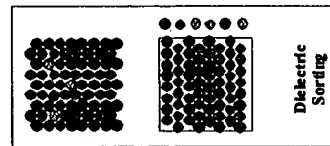
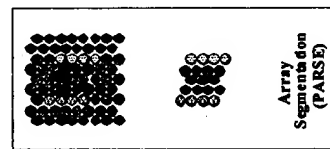
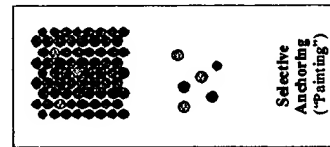


Figure 22a

Figure 22b

RANDOM SEQUENTIAL INJECTION

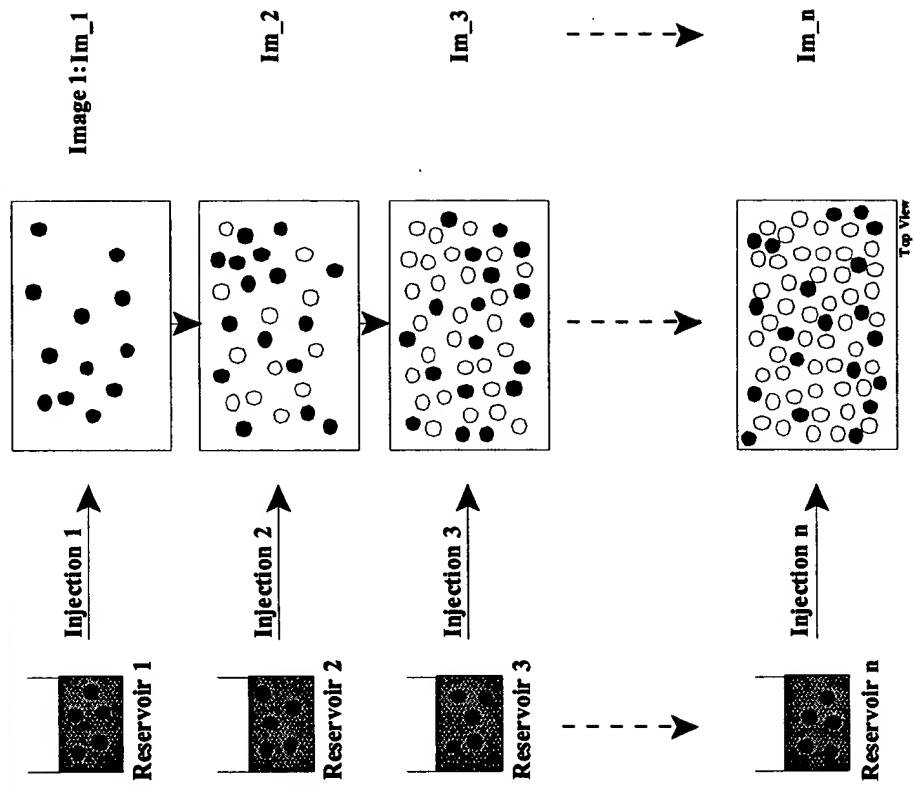


Figure 23

SEQUENTIAL INJECTION & LIGHT-CONTROLLED ARRAY PLACEMENT

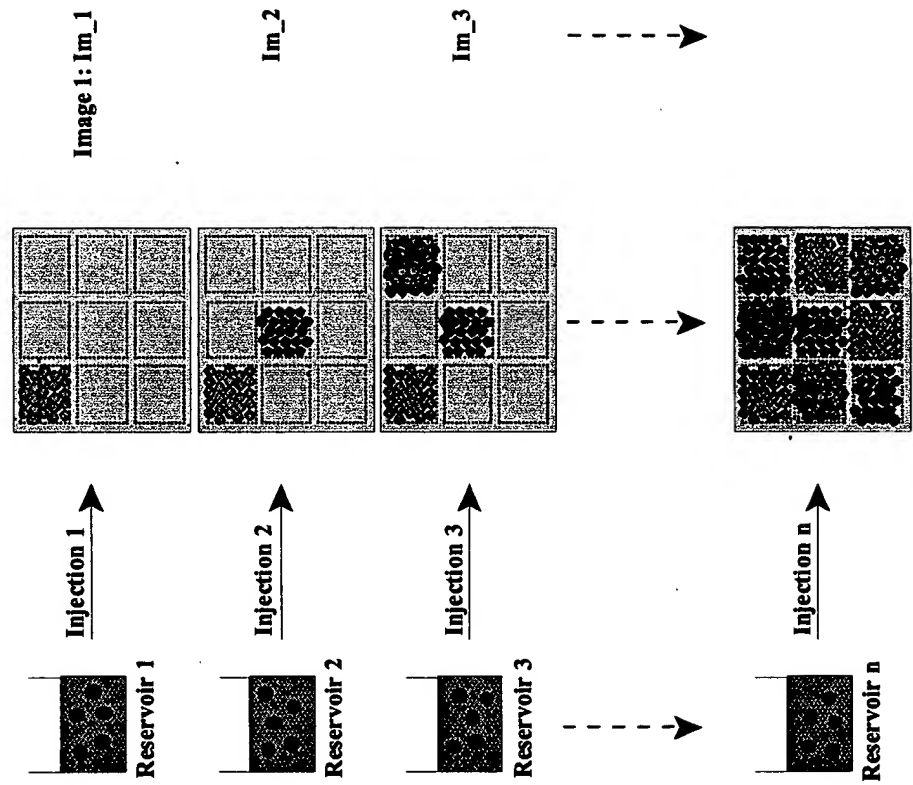


Figure 24

MACRO-TO-MICRO TRANSITION

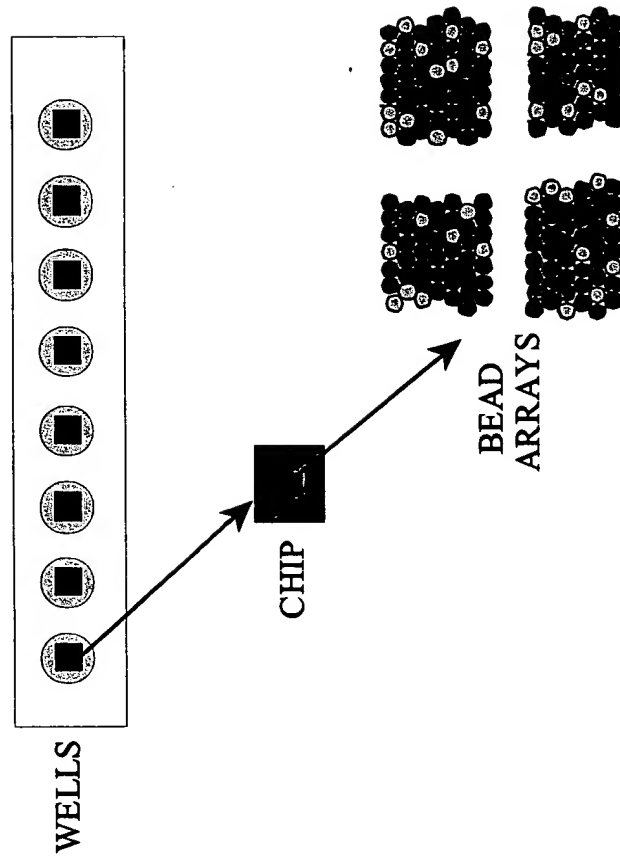
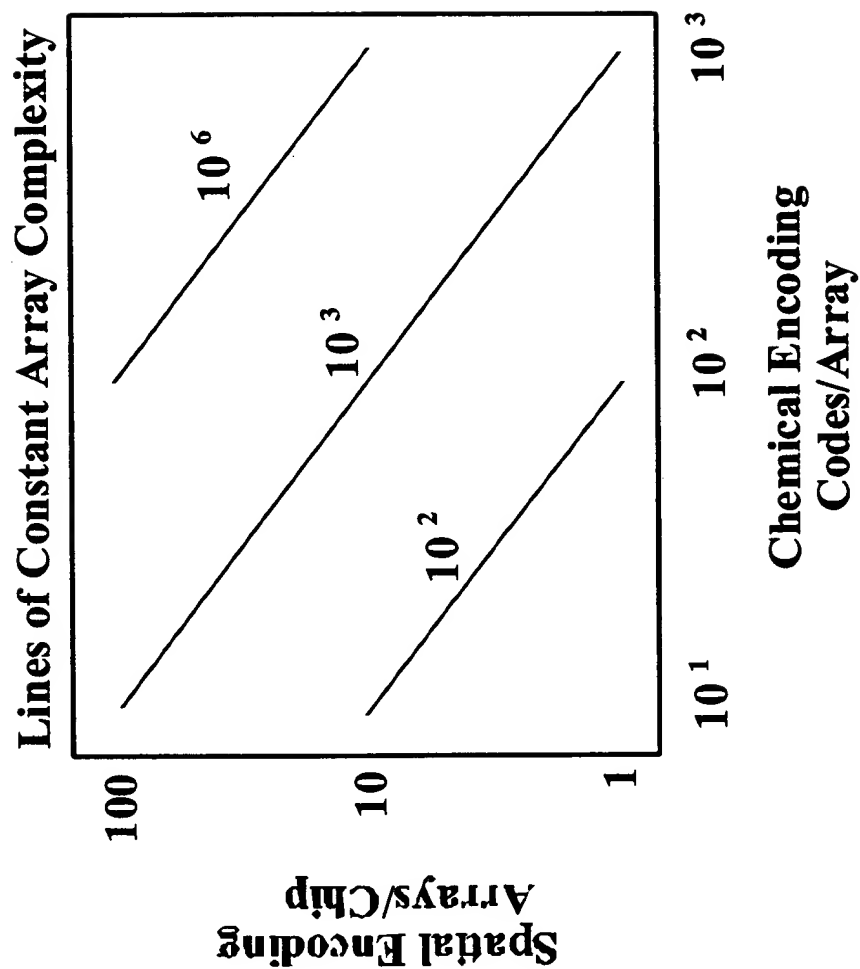


Figure 25a

ARRAY ENCODING



ARRAY ENCODING

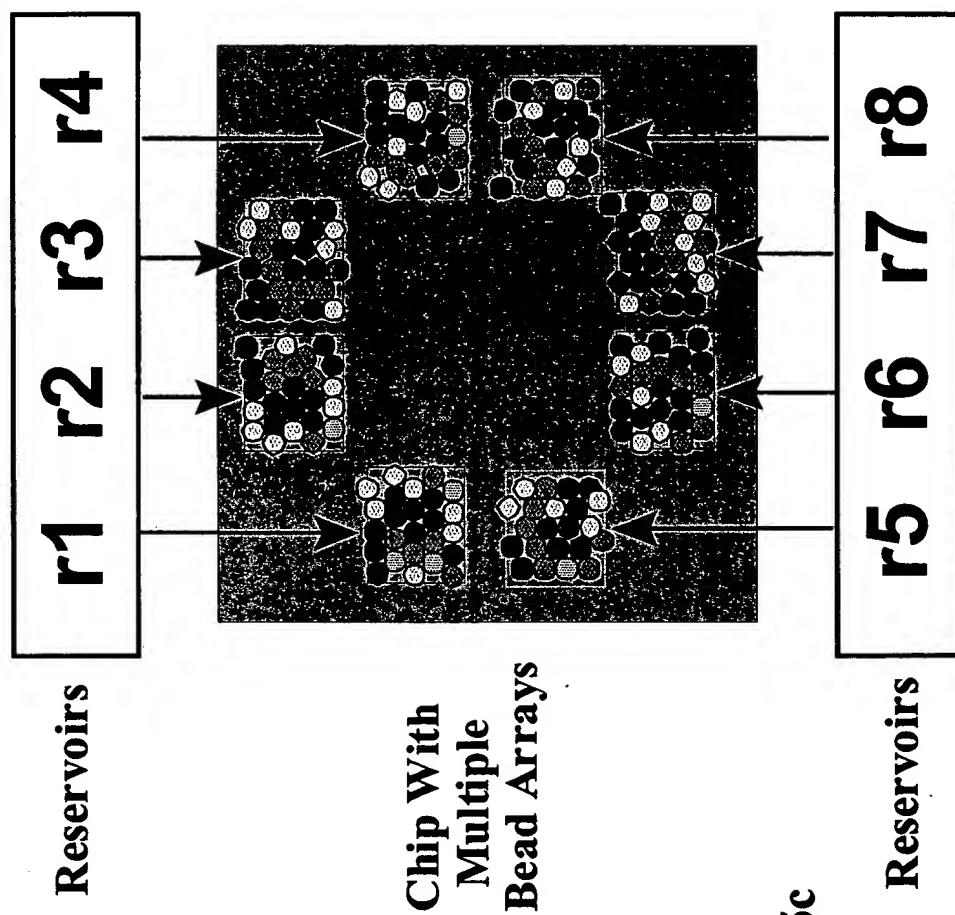


Figure 25c

SEQUENTIAL ASSEMBLY: "BANDING"

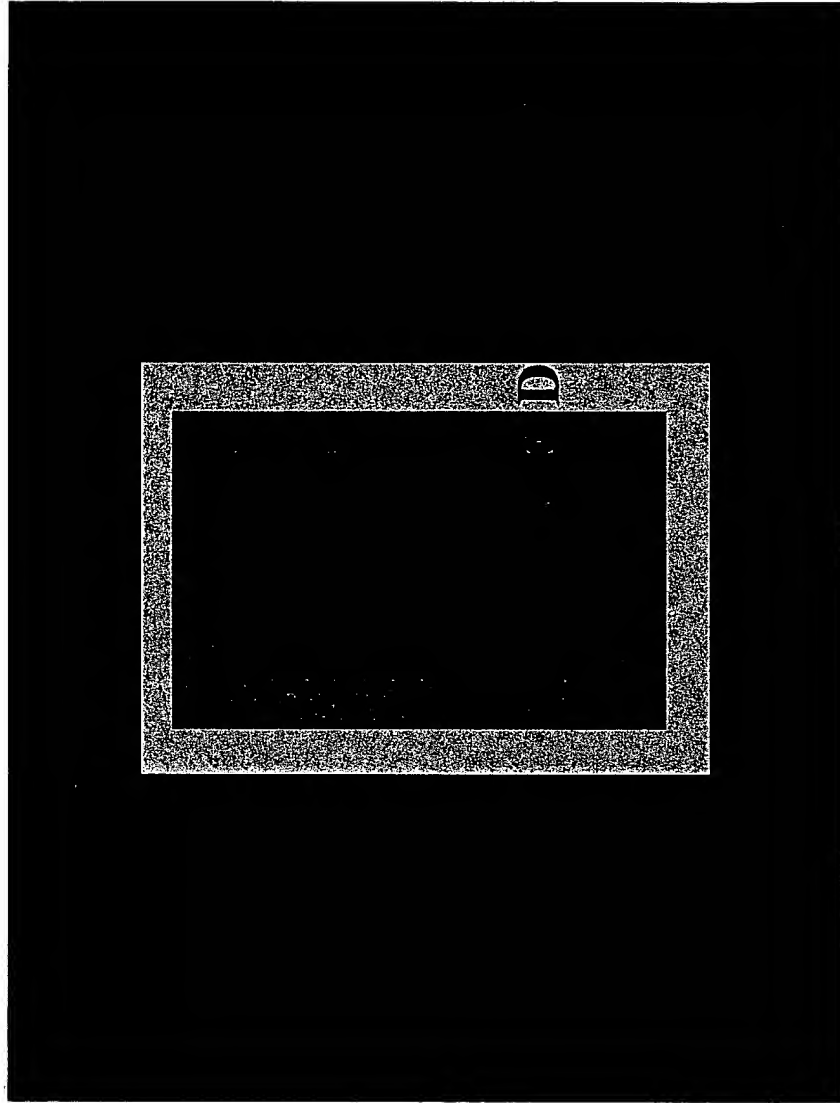


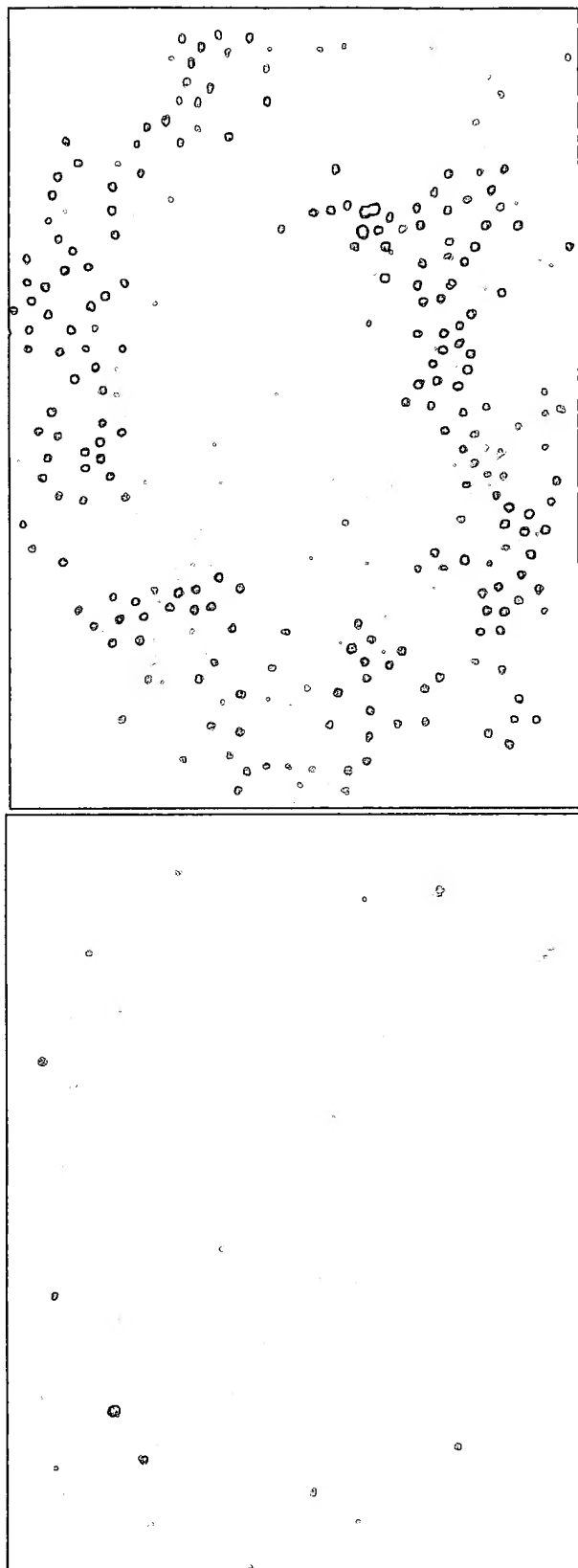
Figure 26a

SEQUENTIAL ASSEMBLY: "BANDING"

Mixture of Two Particle Types

Brightfield Image

Darkfield Image



2.8 μm 5.5 μm

2.8 μm 5.5 μm

Figure 26b

LCD PARSE



Figure 27

ARRAY OF RANDOM SUBARRAYS

A UNIQUE TWO-DIMENSIONAL BAR CODE

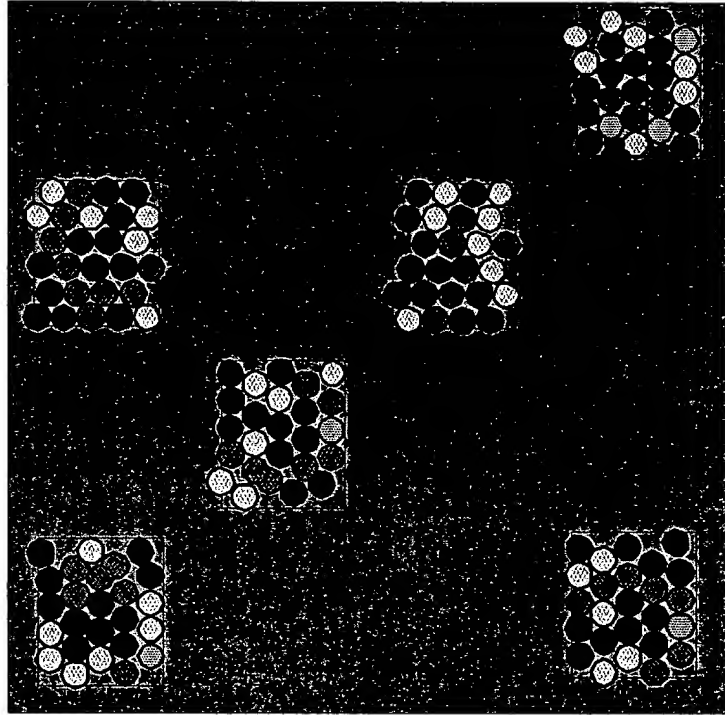


Figure 28

LIGHT-INDUCED FLUID FLOW

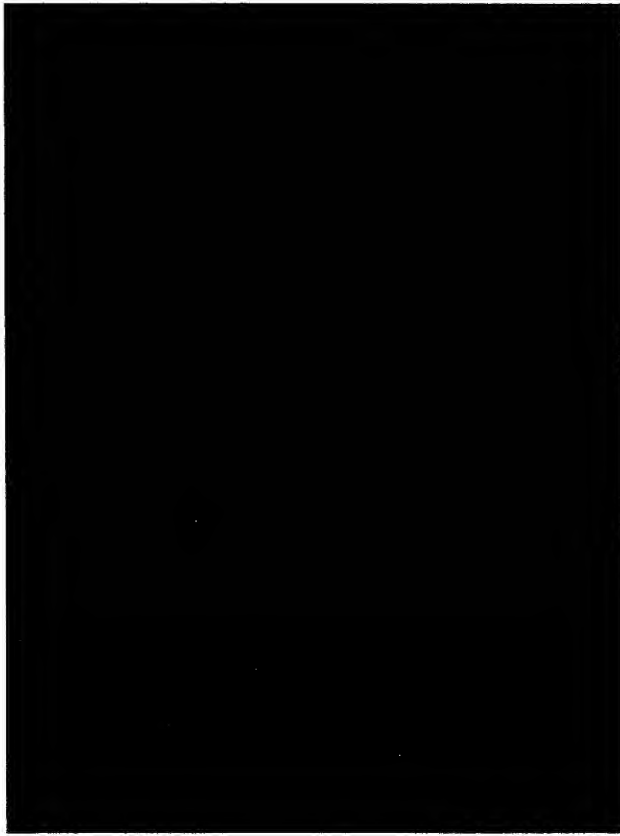


Figure 29